Amendments to the Claims:

1. (Currently Amended) A method for controlling a causticizing process for producing white liquor from green liquor by ~~which comprises slaking, causticizing and white liquor preparation steps, wherein the slaking step comprises~~ feeding green liquor (H_2O, Na_2CO_3, and Na_2S) and lime (CaO) into a slaker to produce hydrated lime ($Ca(OH)_2$) according to the equation

$$H_2O + CaO \dashrightarrow Ca(OH)_2 + \text{heat},$$

~~the~~ caustizing the green liquor by ~~step comprises~~ reacting the hydrated lime and ~~with~~ sodium carbonate (Na_2CO_3) within the green liquor to produce sodium hydroxide ($NaOH$) and calcium carbonate ($CaCO_3$) according to the equation

$$Ca(OH)_2 + Na_2CO_3 \dashrightarrow NaOH + CaCO_3, \text{ and}$$

~~and the white liquor preparation step comprises~~ separating the calcium carbonate from the sodium hydroxide, the method comprising controlling the causticizing process by:

determining a target value for the total titratable alkali;

measuring the total titratable alkali in the green liquor being fed to the slaker;

providing a model that relates green liquor density to the measured total titratable alkali in the green liquor;

measuring~~determining~~ the density of the green liquor being fed ~~in~~to the slaker; ~~based on the model; and~~

calculating a set value for green liquor density based on the measured total titratable alkali in the green liquor, the target value for the total titratable alkali, and the model; and,

controlling the density of the green liquor being fed to the slaker towards the set value with a density controller controlling an amount of weak white liquor added to the green liquor.~~on the basis of total titratable alkali.~~

2. (Original) A method according to claim 1, wherein the causticizing process is controlled by applying a model describing the slaker.

3. (Previously Presented) A method according to claim 2, wherein the slaker is controlled on the basis of the difference between the slaker temperature and the green liquor temperature by adjusting the set value for the temperature difference control on the basis of the difference between the target causticity of lime milk and the causticity titration or titrations, the set value for the causticity being determined on the basis of the model describing the development of the causticity prevailing after the slaker to white liquor causticity.

4. (Previously Presented) A method according to claim 3, wherein the model in question is a static one and determines a causticity difference.

5. (Previously Presented) A method according to claim 4, wherein a quotient is calculated by dividing an average of the differences in white liquor and lime milk causticities by a causticity difference provided by the model on the basis of a production average, and the causticity difference produced by the model is multiplied by the quotient.

6. (Original) A method according to claim 5, wherein the average is calculated for a period of 2 to 40 hours.

7. (Currently Amended) A method according to claim 3, wherein the model in question is corrected ~~a~~ dynamically ~~one~~.

8. (Previously Presented) A method according to claim 3, wherein the lime to green liquor ratio is controlled by adjusting the lime to green liquor ratio using the temperature difference control in such a way that when the measured temperature deviates from the temperature target, the lime to green liquor ratio target is changed in the opposite direction.

9. (Previously Presented) A method according to claim 8, wherein in connection with a production change, the lime to green liquor ratio is changed on the basis of a static model describing the changing of the lime to green liquor ratio during a production change.

10. (Previously Presented) A method according to claim 9, wherein the static model describing the changing of the lime to green liquor ratio during a production change substantially conforms with a production curve.

11. (Previously Amended) A method according to claim 1, wherein green liquor density is controlled on the basis of a total titratable alkali by applying the following equation:

D = (TTA+os)/kk,

where D is the green liquor density;

TTA is the total titratable alkali of the green liquor;

os is an offset; and

kk is a coefficient, wherein the coefficient is a constant angular coefficient the value of which is between 0.9 and 1.4 when the unit used for expressing the TTA and the density is the same,

the offset being determined on the basis of the model.

12. (Previously Presented) A method according to claim 11, wherein the offset is determined on the basis of the green liquor TTA and a momentary density of the green liquor by applying the model including the coefficient.

13. (Cancelled)

14. (Original) A method according to claim 11, wherein the model is specified by calculating averages for the variables used in the model.

15. (Original) A method according to claim 14, wherein after a sufficient green liquor flow and regular titrations for 1 to 40 hours, averages of desired variables calculated over 1 to 40 hours are used in the model.

16. (Canceled)

17 – 25 (Cancelled)

26. (Previously Amended) A method for controlling a slaker within a causticizing process which comprises

(a) measuring the total titratable alkali within a green liquor inlet stream;

(b) determining the density of said green liquor inlet stream based on said total titratable alkali; and

(c) adjusting the density of said green liquor inlet stream by introducing an effective amount of a white liquor stream into said green liquor inlet stream,

wherein the density of the green liquor inlet stream is determined using the following equation:

$$D = (TTA+os)/kk,$$

wherein: D is the green liquor density;

TTA is the total titratable alkali of the green liquor;

os is an offset, which is determined using a model having as parameters the green liquor TTA and momentary density of green liquor; and

kk is a constant angular coefficient, wherein the coefficient is a constant angular coefficient the value of which is between 0.9 and 1.4 when the unit used for expressing the TTA and the density is the same.